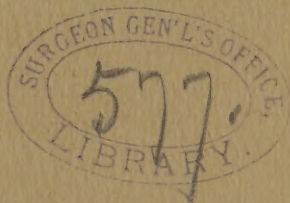


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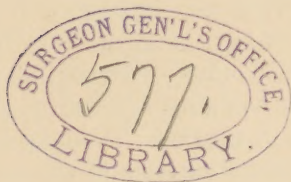
THE TREATMENT
OF TYPHOID FEVER.

BY
CONDICT W. CUTLER, M. D.

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THE TREATMENT OF TYPHOID FEVER.*

By CONDICT W. CUTLER, M. D.

FROM an analysis of about a hundred cases of typhoid fever under my own personal observation with a mortality of nearly ten per cent., and from the statistics of others showing a mortality ranging from seven to fourteen per cent., it would seem that the death-rate from this disease depended more largely upon the character of the epidemic than the plan of treatment employed.

During the past fifteen years numerous methods of treatment have been recommended and faithfully followed by careful observers, but after a thorough trial have either been given up or greatly modified to suit the judgment of the attending physicians. Many of these methods of treatment have had for their object the elimination of the typhoid poison, the stimulation of the central nervous system, the reduction of temperature, or intestinal antiseptis. Among the most prominent of these may be mentioned the Brand system of baths and the Woodbridge guaiacol treatment; but owing to the unsatisfactory results often obtained these plans of treat-

* Read before the Society of Alumni of Bellevue Hospital, March 3, 1897.

ment have been so modified that Brand and Woodbridge would hardly recognize them as their own. And so it has been with all other so-called systems of treatment. They have been popular for a time, then modified, and at last given place to some other method with hopes of a better result. To show how unsatisfactory and varied are the present methods of treatment one need but look at the expressions of opinion of some of the most experienced practitioners given at a meeting of the Academy of Medicine on October 20, 1896:

Dr. W. Gilman Thompson stated that the cold-bath treatment caused enteric fever to run the shorter and milder course and reduced the mortality one half; but it did not prevent relapses nor the occurrence of ordinary complications, and it did not interfere with other modes of treatment.

Dr. Morris Manges said that experiments had been made with cultures of typhoid bacilli and with serum, but little had yet come from them clinically. As to intestinal antiseptics, Stern and others had shown that they were not effectual even on micro-organisms less resistant than the typhoid bacilli.

Dr. Francis Delafield said that the bath treatment was absolutely impossible for a considerable number of patients; that he had treated thirty cases with the Woodbridge treatment carried out literally at first, and afterward in a modified form. The modified form consisted in continuing only the calomel and carbonate of guaiacol ingredients of the pill. Later, finding that calomel given so frequently was producing sore mouth, he substituted for it minute doses of Epsom salts and continued the guaiacol. He could see no particular change in the patients under the different methods of treatment, and it was not at all

probable that drugs would diminish the mortality of the disease.

Dr. A. B. Ball thought that the reason why the doctors at Bellevue had given up the bath treatment some years ago was that they did not employ the rubbing while giving the bath. He believed a high temperature was beneficial in typhoid, tending to kill the bacilli, and that when baths were given it was often best to give them at a temperature of 85° or even 90° F.

Dr. W. P. Northrup said that at the strong recommendation of a doctor he had used in a number of cases Fränkel's toxine. These patients, although recovering, suffered such great discomfort that if he were forgiven for thus allowing them to suffer, he never would repeat the offense. He thought in some cases it might be advisable to apply warmth to the extremities during the cold bath.

Dr. Louis Waldstein believed that calomel was the best drug to use in typhoid fever, especially if given early in the disease.

Dr. A. P. Dudley held that baths had no anatomical or physiological basis relative to typhoid fever. The scientific treatment was eliminative, and the bathing did not eliminate the poison. It subjected the patient to unnecessary shock and endangered the heart, whose muscular fibre was weakened by the disease. It was well known that death in this disease was usually attributed to heart failure. The treatment which he employed was citrate of magnesium to wash out the intestinal tract.

Many of us who have subjected our typhoid patients to all plans of treatment, systematic plans which have been indorsed by physicians of large experience, and unsystematic plans which we have thought suited to some

special case, and have watched some of our patients get well and others die, have undoubtedly come to the same conclusion as did the editor of the *Philadelphia Polyclinic*, who sums up our present knowledge of typhoid fever and its treatment as follows:

“With good treatment and good nursing the mortality of typhoid fever should not exceed seven per cent., and, except under very unfavorable circumstances, it might be reduced to less than five per cent. In seventy-five cases out of a hundred typhoid-fever patients left to themselves without interference on the part of the physician or nurse will get well. In seventy cases out of a hundred typhoid-fever patients will survive poor medication, provided that they have good nursing. And in sixty-five cases out of a hundred they will probably survive even bad medication and bad nursing. Furthermore, the severity of the cases encountered at different times varies very greatly. Fifty or sixty cases in succession may recover with any treatment or no treatment. Three or four cases in succession may perish in spite of the best treatment. Hence, conclusions as to the comparative merits of different plans of treatment can not be drawn from any but the mass of statistics. In general, the simpler the treatment in typhoid fever the better. The less the number of drugs given the better. The less quantity of whatever single drug will answer the purpose that is taken the better. The more closely Nature is followed, and the more cautiously rash interference is shunned, the better.”

Sharing these views to a great extent myself, I present for your consideration a few suggestions concerning the treatment of typhoid fever, with nothing new in the way of drugs, but only in the method of systematic administration, which I believe has never been done before.

From the hundred cases of my own above referred to, seventy were treated heroically with packs, baths, intestinal antiseptics, antipyretics, calomel, Epsom salts, and all recognized forms of treatment except the serum antitoxine, and with the average success, while the remaining thirty consecutive cases were treated much less energetically, and with only one death and one relapse.

Recognizing typhoid fever as a self-limited disease with a natural tendency toward recovery, it occurred to me that better results could be obtained in aiding Nature by maintaining the patient's strength during the period of the disease, and insuring perfect mental and physical rest, than by any other means that we could employ. In the future, with Widal's serum test, it may be possible to make a positive diagnosis of typhoid fever during the first week or ten days of the disease, but unfortunately in the past this has been impossible, and therefore equally impossible to determine the value of the many so-called abortive methods of treatment.

All cases coming under my observation with symptoms which pointed toward the disease were at once ordered to bed, placed under a strictly liquid diet, and given a large dose of calomel, followed in a few hours with Epsom salts. After the bowels were thoroughly moved, one large dose of Warburg's tincture was given every morning on an empty stomach, and followed during the day with about fifteen grains of quinine in solution, given in divided doses. The majority of these patients have within a week entirely recovered, but I have not considered them as abortive cases of typhoid fever, for other cases under the same treatment have shown the characteristic symptoms of the disease apparently without this treatment having had the slightest effect.

As soon as the diagnosis of typhoid fever was established all medication was stopped, and a peptonized milk diet was ordered in three to five ounce doses every two hours, and continued as the only article of diet until convalescence was assured. When the diagnosis of the disease is made there are before the patient from two to four weeks of continued fever, great mental, nervous, and physical prostration, restlessness, and delirium. These conditions must be met and provided for. Every organ and tissue in the body has its physiological function deranged and is acting improperly. To overcome these conditions it is necessary to give nourishing but easily digested and assimilated food, proper stimulation to the depressed nervous system, and to sustain the overtaxed organs and tissues with sedatives to insure quiet and rest, so that as little work as possible may be required of them.

To meet the first indication nearly all physicians agree that a milk diet gives the best result. It seems extremely important that the milk be peptonized, for thus being partially digested artificially, it gives the digestive organs less work to do, and digestion, absorption, and assimilation are more perfectly performed. The gaseous distention of the abdomen was in the majority of my cases but slight when this diet was strictly adhered to.

To meet the second requirement, that of proper stimulation, again most physicians agree that whisky gives the best result. The quantity to be given and the frequency depend entirely upon the condition of the patient; but it should be given at once when the diagnosis is made, and continued until convalescence is thoroughly established. It is usually better to give it in water well diluted and at frequent intervals, rather than in large doses at longer intervals. In all my cases I have

given it in this manner, and its results have been satisfactory, both in regard to the continued effect of the stimulant and to its being well retained by the stomach. None of the patients received less than two ounces a day, and many of them from five to eight ounces, while one patient took over a pint of whisky a day for a brief period.

To meet the third requirement, and thus insure mental and physical rest, and to lessen nervous exhaustion, morphine was used, and to it I consider my good statistics are due. It was used liberally and frequently in all the thirty cases from the time the diagnosis was positively made until the disease had run its course. Some of the patients were given it in small quantities with the whisky—never more than a sixteenth of a grain at one time—others were given it by hypodermic injection in larger doses less frequently. When it agreed with the stomach and no nausea resulted from its use it was given with the whisky; but if there was any disturbance of digestion then hypodermic injections were resorted to. The amount given during the day was enough to produce a decided physiological effect of the drug on the nervous system. The smallest amount given in one day was about a fifth of a grain, and the largest amount two grains; but if the indications had demanded it larger doses would have been given. Decided stupor and coma are contraindications for its use, and it is therefore important that the patients under this treatment be carefully and intelligently watched. It was perhaps fortunate that nearly all my thirty cases were under the care of trained nurses, so that the symptoms could be carefully noted, and the amount of morphine intelligently given as the indications warranted. Small doses were given at first by the mouth. If nausea, indigestion, or constipation resulted, then it

was given by hypodermic injection. The dose was gradually increased in size until the respirations were slightly reduced in number and the patient remained quiet and drowsy, with a decided tendency to sleep much of the time. As the fever subsided and convalescence began the amount of morphine was gradually diminished, and stopped entirely when there was no longer any rise of temperature. In none of these cases was the morphine habit established, nor were there in any of the cases bad results or symptoms which could be attributed to the use of the drug. Constipation did not seem to be a contra-indication for its use, or a slight amount of albumin in the urine. The delirium was always quieted by it, even in cases where it was quite active, and it had a decided stimulating action on the depressed central nervous system, as shown especially in the improved condition of the heart's action and pulse.

As to the effect of morphine on the course of the disease, it apparently had no special influence. The length of the disease was not decidedly shortened in any of the cases. The milder cases ran a little shorter course than usual, and the serious cases a little longer. The temperature ran about its usual course, in one case reaching 107° , and in many of them from 104° to 105° . Diarrhoea was certainly checked in most of the cases, while constipation was produced in others. The most striking effect of the morphine was manifested on the nervous system. There was in the early part of the disease less restlessness and wakefulness, and in the latter stages less delirium and twitching; and throughout the whole disease less headache and general complaints which we so often hear. Dryness of the tongue was present about as usual, certainly not worse, while the skin was more active,

perspiration being quite profuse at times, evidently aiding in the elimination of the typhoid poison.

But one patient suffered with a relapse. She was a young woman who went successfully through a serious attack of the disease, and had a normal temperature for a few days. She then had a return of the fever with very severe diarrhœa, and died, apparently with exhaustion, in about two weeks after the relapse. A post-mortem was allowed, and on autopsy very extensive ulcerations were found in nearly the entire length of the large intestine.

Severe hæmorrhage occurred in but one case, and slight hæmorrhages in but two or three others. Most of these patients received no other medication except the morphine, the complications being treated usually without drugs, as follows: To relieve the dryness of the skin and to aid elimination and perspiration, the entire body was sponged off with tepid water once or twice a day and rubbed dry with a coarse towel, the friction acting as a strong nerve stimulant. If the stomach became irritable, and if the patient vomited, all nourishment and stimulation were given by the rectum, and the stomach allowed an absolute rest, a few teaspoonfuls of water only being given at a time to relieve thirst, until that organ was quieted. If the bowels became distended with gas, a soft-rubber rectal tube passed high into the bowel and left in position would relieve the symptoms. If constipation was present, an enema of soap and water was given, and usually with good results. If a laxative was necessary, drachm doses of Epsom salts dissolved in water and *crème de menthe* given every half hour for three doses would produce the desired result.

How to reduce the temperature in typhoid fever has long been a disputed problem to the medical profession.

We have all used the numerous antipyretic coal-tar products, and most of us, I think, have discarded them as dangerous and worse than useless. I remember once calling a well-known consultant physician to see a case of typhoid fever with me. I was especially worried about the continued high temperature. It could be reduced for a few hours with some antipyretic, but would soon rise again to an alarming degree. When asked his advice he said: "Leave the temperature alone. More typhoid patients die from antipyretics than from the fever. High temperature is seldom the cause of death." I have learned to quite agree with him, and now unless the temperature is excessive it does not alarm me.

In none of these thirty cases were antipyretics used, and in but one case was it necessary to reduce the temperature by means of cold water. This was in the case of a young woman whose temperature went up to nearly 107° , and she became comatose. In her case the wet pack was used, and in an hour the temperature fell some four or five degrees, and with the fall of temperature the comatose condition disappeared, and there was general improvement in her condition. It is reasonable to suppose that this patient would have died had her temperature not been reduced in a few hours. Patients with a temperature of from 103° to 104° seldom require a bath, and tubbing for a temperature of 102° or 103° is neither practical nor advantageous in the large majority of cases. In temperatures of 106° or over, a reduction of temperature by the extraction of heat by cold applications is necessary, but only for the same reason that it is necessary in sunstrokes, and not because it is the temperature of typhoid fever and due to a toxic poison generated in the body.

For the large hæmorrhage an ice bag was placed over the abdomen in the right iliac region, and an extra hypodermic of morphine given. The hæmorrhage did not recur. If it had, I should probably have resorted to the administration of gallic acid, and perhaps ergot, but I doubt if any internal medication given to check hæmorrhage in typhoid fever has ever been of any service. The slight attacks of hæmorrhage received no treatment.

The nervous symptoms and diarrhœa were so controlled by the morphine that no other medication was required. Should the diarrhœa be profuse, exhausting, and not controlled by the morphine, the use of subgallate or salicylate of bismuth and naphthaline would have been followed by good results.

Whether the good results here recorded from the use of morphine in enteric fever will be borne out by its further use, time alone can answer; but from my experience it is the most satisfactory plan of treatment, both to the patient and to the physician, and with the lowest rate of mortality. Complications may arise which would demand the use of other agents, or perhaps necessitate the withholding of the morphine, but such cases would be exceptional ones.

The action of the morphine, although relieving many of the distressing symptoms of the disease, seems to act in some way as an antitoxine, and lessens the depression of the central nervous system, which is most frequently either the direct or indirect cause of death.

What may be expected from the treatment of typhoid fever in the future with antitoxine serum it is too soon to predict, but investigations are going on in this direction which may lead to good results.

With still brighter prospects for success have pathologists been experimenting with typhoid bacilli in anti-typhoid vaccination.

The method employed consists of inoculation of the dead typhoid bacilli.

The experiments of Wright and Semple, although not conclusive, seem to warrant the belief that persons thus vaccinated are protected against typhoid fever.

It is uncertain how long this protection lasts, but as the vaccination can be practised without risk to the life or health of the individual, revaccination can be performed whenever there is great danger of typhoid infection.

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